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On the generic names *Kriegeria*

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Abstract — The basidiomycetous genus *Kriegeria* Bres. 1891 (*Kriegeriaceae*), typified by *K. eriophori*, is legitimate. An ascomycetous genus "*Kriegeria*" was originally published by Rabenhorst in 1876 as an invalid provisional name based on *Ombrophila kriegeriana*. Subsequently, the ascomycetous genus was validly published as *Kriegeria* Höhn. 1914 (*Rutstroemiaceae*), typified by *Peziza elatina*; this genus is an illegitimate later homonym, currently treated as a synonym of *Rutstroemia*. Additionally, Rabenhorst's invalid name was "revived" (validated) as *Kriegeria* Rabenh. ex Seaver 1943, typified by *O. kriegeriana*, to accommodate species currently placed in *Chloroscypha*. Revised nomenclators are presented for both of the genera, as well as for *Ombrophila kriegeriana*.

Key words — *Helotiales, Kriegeriales, Leotiomycetes, Microbotryomycetes, Xenogloea, Zymoxenogloea*

Introduction

Two different genera have been named as *Kriegeria*. The citation of one of these, the basidiomycetous genus *Kriegeria* published by Bresadola (1891), is uncontroversial. However, the correct citation of the ascomycetous genus *Kriegeria* has been the subject of long-standing debate, attributed either to Rabenhorst (1876, 1878a) or to Höhnel (1914); and consequently, the basidiomycetous *Kriegeria* Bres. has been considered to be either an illegitimate later homonym, or a legitimate earlier homonym. The basis of this controversy is whether *Kriegeria* Rabenh. is a validly published alternative name, or an invalid provisional name. We have conducted an extensive literature survey and nomenclatural analysis to resolve this problem.

Kriegeria Höhn. (*Rutstroemiaceae, Helotiales, Leotiomycetes*)

Kriegeria Höhn., Sitzungsber. K. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1, 123: 114. 1914, nom. illeg., non Bres. 1891.

Type: *Peziza elatina* Alb. & Schwein. : Fr., Consp. Fung. Lusat.: 330. 1805.

= ***Rutstroemia*** P. Karst., Bidr. Känn. Finl. Nat. Folk 19: 12. 1871.
TYPE: *Peziza firma* Pers. : Fr., Syn. Meth. Fung.: 658. 1801.
= *Kriegeria* Rabenh. ex Seaver, Mycologia 35: 492. 1943, nom. illeg., non Bres. 1891, nec Höhn. 1914.
["*Kriegeria*" Rabenh., Fungi Europ. Exsicc. 24: no. 2315. 1876, nom. prov.]
TYPE: *Ombrophila kriegeriana* Rabenh., Fungi Europ. Exsicc. 24: no. 2315. 1876.

Ombrophila kriegeriana Rabenh., Fungi Europ. Exsicc. 24: no. 2315. 1876.
["*Kriegeria olivacea*" Rabenh., Fungi Europ. Exsicc. 24: no. 2315. 1876, nom. prov.]
≡ *Ciboria kriegeriana* (Rabenh.) Rehm, Hedwigia 22: 36. 1883.
≡ *Chlorosplenium kriegerianum* (Rabenh.) Sacc., Syll. Fung. 8: 318. 1889.
≡ *Kriegeria kriegeriana* (Rabenh.) Seaver, Mycologia 35: 493. 1943.
= *Peziza elatina* Alb. & Schwein. : Fr., Consp. Fung. Lusat.: 330. 1805.
≡ *Helotium elatinum* (Alb. & Schwein. : Fr.) Quél., Ench. Fung.: 309. 1886.
≡ *Chlorosplenium elatinum* (Alb. & Schwein. : Fr.) Sacc., Syll. Fung. 8: 318. 1889.
≡ ***Rutstroemia elatina*** (Alb. & Schwein. : Fr.) Rehm, Rabenh. Krypt.-Fl., Ed. 2, 1(3): 767. 1893.
≡ *Kriegeria elatina* (Alb. & Schwein. : Fr.) Höhn., Sitzungsber. K. Akad. Wiss., Math.-Naturwiss. Kl., Abt. 1, 123: 114. 1914.

The critical publication concerning the ascomycetous *Kriegeria* is the protologue of *Ombrophila kriegeriana* (Rabenhorst 1876). This printed exsiccata label presents a Latin description, Latin collection data [Königstein, Saxony, on *Abies* twigs], a paragraph of German "Obs.", and the author's initials "L.R." In the Observations, Rabenhorst noted: (1) that the specimens are immature, creating some doubt whether *Ombrophila* is the appropriate genus [indicated by inclusion of a question mark after the genus name in the binomial proposal]; (2) that the collector, W. Krieger, will endeavor to collect more material with mature ascomata; (3) that the species may require the proposal of a new genus for which he would suggest the name *Kriegeria*; (4) that in this potential new genus, he would suggest the epithet *olivacea*. He did not combine the genus and epithet into an explicit binomial (Seaver 1943 appears to be the first author to assemble the binomial). Considered as a whole, the Observations do not suggest that "*Kriegeria olivacea*" was being formally proposed as an alternative name for *Ombrophila kriegeriana*, but that it was merely being suggested as a provisional name to be taken up in the future if mature specimens justified the proposal of a new genus. "*Kriegeria*" Rabenh. and "*Kriegeria olivacea*" Rabenh. are therefore invalid names (McNeill et al. 2012: Art. 36.1(b)).

This situation is somewhat obscured in Rabenhorst (1878a), where the *Ombrophila kriegeriana* protologue is reproduced verbatim, but with the first two sentences of the Observations omitted; i.e., there is no mention of the immaturity of the specimens nor of Krieger's intention to look for mature material. (Nevertheless, when Donk (1958) reached his firm decision that

"*Kriegeria*" Rabenh. was a provisional name, it was this reference that he cited and its abbreviated version of the original Observations that he quoted.) Because Rabenhorst (1878a) has been widely (but erroneously) accepted as the protologue of *O. kriegeriana*/"*K. olivacea*", several mycologists have misunderstood "*Kriegeria olivacea*" to have been proposed as a valid alternative name. It is significant that the Index of Names for Hedwigia vol. 17 (Rabenhorst 1878b: p. V) does not list either "*Kriegeria*" or "*Kriegeria olivacea*". Rabenhorst died on 24 April 1881, presumably before Krieger had collected or sent any mature specimens.

Winter (1881: 70–71) commented on *Ombrophila kriegeriana*, reporting that he had often seen it during spring in Zürich. On the basis of his own observations and Rabenhorst's description, Winter concluded that *O. kriegeriana* was a synonym of *Peziza elatina* Alb. & Schwein.; he made no mention of the names "*Kriegeria*" and "*Kriegeria olivacea*".

Ombrophila kriegeriana was recombined in *Ciboria* by Rehm (1883: 36–37) and in *Chlorosplenium* by Saccardo (1889: 318). Both authors mentioned Winter's proposed synonymy with *Peziza elatina* (without accepting it), but neither of them mentioned the names "*Kriegeria*" and "*Kriegeria olivacea*".

Rehm (1893: 767) recombined *Peziza elatina* in *Rutstroemia* (the genus in which this species is currently accepted). Rehm's *R. elatina* nomenclator included *Ombrophila kriegeriana* and its *Ciboria* and *Chlorosplenium* recombinations as synonyms, but it did not include "*Kriegeria olivacea*" (even though Rabenhorst's suggestion of this genus and this epithet are annotated in Rehm's synopsis of the literature).

Höhnel (1914: 112–114) was the first author to validate the ascomycetous genus *Kriegeria*, but his treatment is full of errors:

(1) Höhnel attributed the genus to "Winter (Hedwigia, 1878, 17. Bd., p. 32)";

(2) he stated that *Peziza elatina* was transferred to *Kriegeria* by "Winter (Hedwigia, 1878, 17. Bd., p. 32)"; and

(3) he stated that the generic type was "*Kriegeria elatina* (A. u. S.) Winter".

The cited Hedwigia reference has no connection with Winter and is, in fact, Rabenhorst (1878a), which contains no mention of *Kriegeria elatina* or its basionym *Peziza elatina*. Rabenhorst edited the first ten issues of Hedwigia vol. 17 (pp. 1–160, January–October 1878), and Winter's editorship did not commence until issue 11 (November 1878). (Likewise, Winter did not assume editorship of Fungi Europaei Exsiccati until late 1881, after Rabenhorst's death.) We have scrutinized all of Winter's publications from 1878 until his death in 1887 and can find no mention of either "*Kriegeria*" or "*Kriegeria elatina*"; his only relevant publication was Winter (1881) where he synonymized *Ombrophila kriegeriana* under *Peziza elatina* (as discussed above). *Kriegeria*

Höhn. cannot be treated as a validation of "*Kriegeria*" Rabenh., because they have different (albeit conspecific) generic types, *Peziza elatina* [≡ *K. elatina*] versus "*K. olivacea*". Consequently, Höhnel's (1914) *Kriegeria* and *K. elatina* must be interpreted as a gen. nov. and a comb. nov. attributable to Höhnel alone (not to "Rabenh. ex Höhn.", and definitely not to "G. Winter ex Höhn."). *Kriegeria* Höhn. 1914 is an illegitimate later homonym of the basidiomycetous *Kriegeria* Bres. 1891 — a genus that Höhnel himself (1909: 1157–1159) had apparently accepted as legitimate. Höhnel (1914) included a second species, *Kriegeria urceolus* (Fuckel) Höhn. [≡ *Rutstroemia urceolus* (Fuckel) W.L. White (White 1941; Whetzel 1945)].

In his monographic treatment of *Rutstroemia*, White (1941) included the erroneous synonym "*Kriegeria* Wint. Hedw. 17: 32, 1878" (copied from Höhnel 1914) in his generic nomenclator. He accepted the full *R. elatina* nomenclator published by Rehm (1893), including *O. kriegeriana* and its recombinations, but he added the fictitious "*Kriegeria elatina* Wint. Hedwigia 17: 32, 1878" (also copied from Höhnel 1914).

Seaver (1943) proposed to "revive" the Rabenhorst genus "*Kriegeria*", typified by *Ombrophila kriegeriana*, which he recombined as *Kriegeria kriegeriana*. Because of its different type, Seaver's genus must be interpreted as an additional later homonym, *Kriegeria* Rabenh. ex Seaver, a heterotypic synonym of *Kriegeria* Höhn. Seaver's paper has several puzzling aspects. Inexplicably, he cited two different "protologue" references: "Rab. Fungi Eur. 2315. 1878 [sic]" (i.e., Rabenhorst 1876) for *Ombrophila kriegeriana* and "Hedwigia 17: 32. 1878" (i.e., Rabenhorst 1878a) for the genus "*Kriegeria*" and for the species "*Kriegeria olivacea*". Seaver's failure to observe that all three names were actually published simultaneously by Rabenhorst (1876) suggests that he had not seen the *O. kriegeriana* exsiccata label. Significantly, Seaver (1943) did not mention Höhnel's treatment of *Kriegeria* nor Winter's and Rehm's synonymization of *O. kriegeriana* with *Rutstroemia elatina*, and he explicitly rejected White's (1941) placement of *Kriegeria* in *Rutstroemia*. Seaver (1943) synonymized his genus *Kriegeria* with *Chloroscypha* Seaver, and cited the protologue description of *Chloroscypha* (Seaver 1931) as the validating description of *Kriegeria*. In addition to the type (Rabenhorst's immature exsiccata material), Seaver (1943) recombined five other species that had all previously been included in *Chloroscypha* (Seaver 1931, 1938), and two further species were recombined in *Kriegeria* by Seaver (1951). Apart from *Kriegeria kriegeriana* (on a pinaceous host: *Abies*), all of Seaver's *Kriegeria* species (on cupressaceous or taxodiaceous hosts: *Calocedrus*, *Chamaecyparis*, *Cryptomeria*, *Juniperus*, *Thuja*, *Sequoia*) are currently accepted in *Chloroscypha* (Petrini 1982). Seaver seems to have been unaware of the incongruence between *Kriegeria* sensu Höhnel/White [= *Rutstroemia*] and *Kriegeria* sensu Seaver [= *Chloroscypha*].

Kriegeria Bres. (*Kriegeriaceae, Kriegeriales, Microbotryomycetes*)

Kriegeria Bres., Rev. Mycol. (Toulouse). 13: 14. 1891.

≡ *Xenogloea* Syd. & P. Syd., Ann. Mycol. 17: 44. 1919, nom. illeg. (superfluous).

TYPE: *Kriegeria eriophori* Bres., Rev. Mycol. (Toulouse). 13: 14. 1891.

= *Zymoxenogloea* D.J. McLaughlin & Doublés, Mycologia 84: 671. 1992.

TYPE: *Zymoxenogloea eriophori* D.J. McLaughlin & Doublés, Mycologia 84: 671. 1992.

Contemporary material of the sole species was distributed as exsiccata specimens (Pazschke 1895; Kohlmeyer 1962). Sydow & Sydow (1919) thought that *Kriegeria* "Winter (cfr. Hedwigia 1878, p. 32)" was a valid name, making the basidiomycetous *Kriegeria* Bres. an illegitimate later homonym, for which they proposed *Xenogloea* as a replacement name. Their miscitation of Winter as the author and Rabenhorst (1878a) as the protologue suggests that they were relying on Höhnel's (1914) treatment rather than carefully considering the original Rabenhorst (1876) protologue. With "*Kriegeria*" Rabenh. being an invalid provisional name, *Kriegeria* Bres. is legitimate and *Xenogloea* is superfluous and illegitimate. Doublés & McLaughlin (1992) treated *Kriegeria* Bres. as a legitimate generic name, and described a new genus *Zymoxenogloea* for the yeast-like anamorphic state. Toome et al. (2013) proposed *Kriegeriaceae* and *Kriegeriales* as a new family and order typified by *Kriegeria* Bres.

Discussion

The acomycetous genus *Kriegeria* has been published three times (once invalidly and twice illegitimately):

(1) as "*Kriegeria*" Rabenh. 1876, an invalid provisional name that no mycologist during the next 38 years ever treated as a formal name: its invalid status has been argued by several eminent mycologists, e.g., by Dennis (1954, 1956) and, most persuasively, by Donk (1958), and it is not listed by Kirk et al. (2008) nor by the Index Nominum Genericorum website (ING 2015);

(2) as *Kriegeria* Höhn. 1914, a valid generic name based on a different type, but an illegitimate later homonym (of *Kriegeria* Bres.; ING 2015): it was not taken up by any subsequent mycologist but almost universally accepted as a synonym of *Rutstroemia* (e.g., Rehm 1893, White 1941, Whetzel 1945, Dennis 1956, Kirk et al. 2008) — major errors in Höhnel's protologue have created citational confusion that still persists 100 years later;

(3) as *Kriegeria* Rabenh. ex Seaver 1943, an illegitimate later homonym based on Rabenhorst's invalid name: Seaver's genus was rejected by subsequent mycologists (e.g., Dennis 1954, 1956; Kobayashi 1965; Petrini 1982), who argued that the species included in *Kriegeria* by

> Seaver (1943, 1951) were not congeneric with the type (*Ombrophila kriegeriana* [= *Rutstroemia elatina*]) but instead belonged in *Chloroscypha.* Seaver's *Kriegeria* homonym is not mentioned by Kirk et al. (2008) nor by ING (2015).

There is no legitimately published ascomycetous genus *Kriegeria*, and this name is not in current use.

In contrast, the basidiomycetous *Kriegeria* Bres. 1891 is a legitimate monotypic genus that is predated only by the invalid "*Kriegeria*" Rabenh. 1876. Saccardo (1892: 497) tentatively identified the type as a *Septogloeum,* and Höhnel (1909: 1157–1159) recombined it in *Platygloea*, but subsequently *Kriegeria* Bres. has been accepted as a distinct genus, either under the superfluous replacement name *Xenogloea* (Sydow & Sydow 1919: 44; Weiss 1950: 295; Martin 1952: 88–89; Kao 1956; Bandoni 1957: 838) or as a legitimate *Kriegeria* Bres. (e.g., Davis 1922: 410; Donk 1958: 206; Oberwinkler & Bandoni 1982: 1744; Farr et al. 1989: 753; Doublés & McLaughlin 1992; Fell et al. 2001; Swann et al. 2001; Sampaio & Oberwinkler 2011; Toome et al. 2013). *Kriegeria* is accepted as legitimate, and *Xenogloea* as superfluous, by Kirk et al. (2008) and ING (2015).

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